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ABSTRACT

The paper documents the "failure" of deaf education and proposes a model program for the education of deaf children. Reasons given for this failure include lack of linguistic access to curricular content and the cycle of low expectations. Early acquisition of American Sign Language (ASL) is encouraged both to develop cognitive skills and improve the child's ability to learn English. Twelve principles of the proposed model educational program include: sign language as the first language of deaf children, separation of sign and spoken language in the curriculum, second language (English) learning through reading and writing; and the least restrictive environment as one in which deaf children acquire a natural sign language and thus, access to spoken language and curriculum content. Program components include: (1) Family Support Program (assisting children and families in language learning); (2) Family-Infant-Toddler Program (organized activities and training to foster ASL acquisition and socio-emotional development); (3) a preschool-kindergarten curriculum designed to prepare the children for the regular primary school; (4) a grades 1-12 component taught in such a way as to enable deaf students to acquire the regular curriculum; (5) a Child Development Center providing day-care and developmental experiences for children through the third grade; (6) an administration, research and development component; and (7) a component focused on materials and resources development. (DB)

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Unlocking the Curriculum: Principles for Achieving Access in Deaf Education

by

Robert E. Johnson
Scott K. Liddell
Carol J. Erting

Department of Linguistics and Interpreting
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Unlocking the Curriculum: Principles for Achieving Access in Deaf Education

THE FAILURE OF DEAF EDUCATION

The education of deaf students in the United States is not as it should be. It has been documented time upon time that deaf children lag substantially behind their hearing age mates in virtually all measures of academic achievement.[1] Gentile (1972) found that deaf students' achievement on the Stanford Achievement Test (SAT) was markedly depressed in spelling, paragraph comprehension, vocabulary, mathematics concepts, mathematics computation, social studies, and science. Allen (1986) demonstrates that these patterns still persisted in 1983 and that, for each year of school, deaf children fall further behind their hearing peers in reading and mathematics achievement. The most recent comments on the situation have come from the Commission on Education of the Deaf, convened in 1987 to examine the current status of deaf education in the United States. Throughout its report (1988) the Commission reiterated its conclusion that the results of deaf education have failed to live up to our expectations and investments.

We contend in this essay that these results represent a failure of the system that is responsible for educating deaf children. We will argue in support of changes in the system which recognize deaf children's need for early natural language competence and for communicative access to curricular material. Although these changes will not simply or quickly solve the problems of deaf education, they could move the system toward a higher rate of success.

Understanding the difficulties facing deaf education begins with an examination of the children being educated. Less than ten percent of children who are prelingually deaf come from families in which there is an older deaf relative (Meadow 1972; Rawlings 1973; Trybus and Jensema 1978; Karchmer, Trybus, and Paquin 1978). Through such relatives, many of these children can gain access to the acquisition of a natural language (in the form of American Sign Language) and thereby to the information that is critical for those aspects of normal socio-emotional development that are founded in family interaction. For the other ninety-plus percent of deaf children, however, the situation is quite different. Typically, a deaf child is the first deaf person that the members of his family have ever encountered. For such parents, having a deaf child is generally unexpected and traumatic. Furthermore, their first advice usually comes from a pediatrician or an audiologist, many of whom do not understand the importance of early sign language acquisition. Thus, the parents and siblings of deaf children seldom have the communication skills or the knowledge and experience required to provide these children with an accessible context for the acquisition of either a natural language or the cultural understandings and experiences available to hearing children.

Thus, when a deaf child of hearing parents enters elementary school, that child is typically already well behind children with normal hearing in such critical areas as linguistic proficiency (in either spoken English or in a signed language), factual knowledge about the world, and social adjustment.

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[1] Throughout this essay, we use the word **deaf** in its most generic sense to include all children whose hearing impairment is sufficiently severe that they are not able to benefit fully from ordinary classroom placements. In general, this includes those children identified as "hearing impaired" in the demographic and statistical studies we cite. It is our view that our conclusions about accessible deaf education apply equally to all deaf children, regardless of the severity of their hearing loss.

Over the subsequent years, hundreds of thousands of dollars are spent on such a child's education. The money pays for teachers with special training in the education of deaf children, audiological services, technological devices to assist hearing, speech teachers, and the latest computer hardware and software. Virtually all of this effort is designed to help children acquire English through the production and understanding of sounds.

As the years progress, and in spite of this investment, deaf children fall behind hearing children of the same age at an increasing rate each year. When it is time to graduate from high school, the average deaf child has grown into a young adult whose ability in most school subjects is grossly deficient. Statistics gathered periodically by the Center for Assessment and Demographic Studies at Gallaudet University show that the average performance of a deaf high school graduate is far below the average performance of hearing high school graduates, especially in those areas that depend on comprehension of English speech or text.

In spite of several decades of concentrated efforts to improve the figures, the average reading level of deaf high school graduates remains at roughly the third or fourth grade equivalent, and average performance on mathematics computation is below the seventh grade equivalent (Allen 1986:164-5). The issue has recently been brought to the attention of educators of deaf children by Paul (1988:3):

> Since the 1970's, most deaf students have been educated in Total Communication programs in which some form of signing and speech is used simultaneously for communication and instructional purposes. Despite improvement in the development of tests, early amplification, and the implementation of early intervention or preschool programs, most students are still functionally illiterate upon graduation from high school.

The simple averages reflected in these comments point to a serious problem with the system. But more disturbing is the narrowness of the range in achievement scores. Even the best deaf students graduating from high school (including those who are less than profoundly deaf) demonstrate depressed achievement scores in comparison to their hearing peers. A 1988 survey of achievement of entering freshmen at Gallaudet University demonstrates this point. Gallaudet, a university specifically for deaf students, endeavors to attract and accept only the most qualified students in the United States. A summary of the achievement scores of the entering freshman class of 1988 shows that a grade equivalent of 10.4 in reading puts a student in the 98th percentile of all deaf students in the United States. Similarly, a grade equivalent of 7.8 in "language" (English grammar) falls into the 93rd percentile (Goodstein 1988). Thus, even the highest levels of achievement among deaf students are depressed by comparison to hearing norms, according to which much higher grade-equivalents are necessary to be included in the 93rd to 98th percentiles.

These results appear not to be restricted to children who have been exposed to any one of the several "methods" for educating deaf children currently in use in the United States. Each method is more accurately described as a policy about how teachers and students should interact and communicate with one another. These approaches to communication include oralism, total communication, simultaneous communication, artificially developed systems for coding English, and Cued Speech. In the end, regardless of the particular method selected by parents or educators, the results are less than adequate.

This conclusion is even apparent to laypersons who examine deaf education from the outside. A recent segment of The MacNeil-Lehrer News Hour (1988) concluded that each of the major approaches to educating deaf children in America (private oral programs, residential Total Communication programs, and public mainstream programs) is "seriously flawed."

They observed that the problems persist in spite of the fact that classes for deaf students are small compared with classes for their hearing counterparts. A class size of eight to ten is typical. Moreover, teachers of deaf students are highly trained, and typically hold an MA or MEd degree from a program which provides specialized training in deaf education. In addition, the cost of educating a deaf student in specialized programs is quite high when compared to that of educating hearing, public school students. How is it possible that such a well-developed, costly, and elaborate system has failed?

The Reasons for Failure

It is our position that the failure of deaf education to live up to its promise results, first, from deaf children's fundamental lack of access to curricular content at grade level, and, second, from the general acceptance of the notion that below grade-level performance is to be expected of deaf children. The first of these problems --access-- is in our opinion largely a language-related issue. The second --low expectations-- is, we believe, primarily an issue of values and attitudes that have developed among those who educate deaf children.

Linguistic Access to Curricular Content

The issue of linguistic access to curricular material has been at the heart of all discussions about pedagogy in deaf education since about 1870. Most proponents of one methodology or another have used access to educational and social benefits as the underlying justification for their proposals. Most arguments about pedagogy have centered on what means of communication should be implemented or inspired in deaf children in order for them to match more closely the normative linguistic and behavioral expectations of hearing children.

However, it is not the case that the developmental history of deaf children is linguistically like that of their hearing peers. It is unusual for a hearing child to reach the age of four or five without having acquired at least the rudiments of a natural language. Even severely mentally retarded children develop rather sophisticated linguistic competence at an early age.

It is usually the case, however, that deaf children of hearing parents have not developed a sophisticated competence in any native language (signed or spoken) by the time they enter kindergarten. Because most deaf children are born into all-hearing families, they tend to be addressed in the home only in spoken English, a language and modality which may be almost totally inaccessible to them. Upon entering school they are consequently already well behind hearing age mates in both language development and the cognitive and social development that comes from interacting with parents and peers using a natural language. It follows that such children will also be substantially behind their hearing peers in the acquisition of the knowledge and information expected to be held by children of their age.

In all of these respects, children who have been addressed largely in spoken English will typically also be behind their deaf age mates who have acquired ASL naturally. These children generally come from families with deaf parents or older deaf siblings, and typically have a native competence in natural sign language and several years of experience conversing about the world with adults and peers.

We contend that education programs for deaf children in this country deny the linguistic needs of either of these groups. To our knowledge, all programs in the United States continue to present curricular material in a form that is not accessible to either of these categories of children. Material presented in spoken English is inaccessible to any deaf child, including even those with less than profound hearing losses. If deaf children could deal with plain spoken English, there would be no

need for special educational treatment. That is, because the majority of deaf children fail when only spoken English is available, our country has long recognized the necessity of special programming. For reasons we will discuss below, material presented in "Signed English" is usually equally inaccessible.

Oral programs use spoken English as the sole mode of instruction. Although residential oral schools have greatly declined in number, there are still many oral, public school, day programs for educating deaf students. The underlying assumption of such programs is that children will acquire spoken English through seeing and hearing it, and that this language acquisition will lead to more complete integration with the "hearing world" (Van Uden 1968; Miller 1970; Northcott 1981). They have traditionally failed because deaf children cannot hear and because only a small part of the spoken English signal may be comprehended visually. Competent lipreading requires prior knowledge of the language and being able to use that knowledge (and partial hearing) to supply missing information. Thus, children who have substantial residual hearing and children who have become deaf after the acquisition of spoken English typically have been more successful in oral programs. Even with such advantages, it takes years of concentrated, individualized training for a child to develop reliable skills in lipreading and speech, usually to the exclusion of a substantial portion of ordinary curricular material.

For a profoundly and prelingually deaf child with little or no prior language experience, oral education is expected to teach not only speech and lipreading, but also to provide the fundamental model for acquisition of the English language. Children are expected to acquire, to understand, and to use spoken English simultaneously.

But more critical to the educational process is the fact that the same children are expected from the first day to receive, process, and learn all curricular content through spoken English produced by their teachers. It is not surprising that most deaf children do poorly in this environment. It appears to us to be unrealistic to think that a person who does not know a language and who cannot receive it in the form presented could learn much from someone trying to communicate in that language.

In addition, because oral programs usually forbid signing, the social environment for students is also inadequate. Although children in oral schools typically create their own systems of signs with which they communicate in private, these systems are often quite restricted and usually differ markedly from more-standard ASL. Students cannot communicate easily among themselves or with the adults in classrooms or other official environments. Neither can they "overhear" conversations among others in the way that hearing children do. In these ways, the system also limits children's access to general cultural knowledge, socio-emotional experiences, and other interactions that might affect cognitive development. Thus, for many profoundly deaf children, complete reliance on audition and lipreading is unreasonable and counter-intuitive.

Total Communication was well-established as a "philosophy" of deaf education by the early 1970's and, in its most common incarnation as simultaneous communication, has since become the predominant methodology in the United States. Because it calls for teachers to use signing in the classroom, it has come to stand as a symbol of opposition to oralism and as such has enjoyed substantial support from the adult deaf population.

While it is true that Total Communication programs re-introduced signing to the classroom, it has not made curricular material accessible to either of the categories of deaf children described above. The required "mode" of communication in virtually all Total Communication programs is spoken English supported by simultaneous signs. We refer to such signing as sign-supported

speech (SSS), in order to focus on the assumption that the speech is seen as the primary signal in the conglomerate of signing and speaking (Johnson and Erting, in press). A large proportion of the signs used in SSS are special signs developed for use with spoken English. The goal of such signing is to present simultaneous signed and spoken utterances, both of which are held to be complete representations of English. According to this model, it is these representations of English that serve both as the input for natural language acquisition and as the vehicle for the transmission of curricular material.

The use of signs to support spoken English is often referred to as "sign language," but it is not. Sign languages are natural languages with grammars independent of spoken languages. This has been demonstrated by scores of researchers beginning with Stokoe (1960). This research has shown that sign languages like ASL are natural languages because (1) they develop naturally over time among a community of users, (2) they are acquired through an ordinary course of language acquisition by children exposed to them, and (3) they are grammatically organized according to principles found in all other human languages but exhibit independent patterns of organization that make each sign language unique.

In contrast, artificially developed systems for SSS have none of these three characteristics. They have been developed in large part, not through regular use by a community, but by committee; they tend to be taught rather than acquired; and what grammatical organization they have derives purely from another language. Thus, although a people using SSS are moving their hands, they are not using a sign language.

For these reasons, the signed portion of SSS utterances does not have the grammatical, morphological, phonological or lexical structure of American Sign Language. In fact, because ASL is so different in structure from English, it would be impossible to speak full English sentences and sign complete ASL sentences simultaneously. Rather, an SSS utterance is a series of ASL signs and invented signs in English word order that is intended only to represent English speech.

It has been known since the early stages of the implementation of Total Communication that the signal in both parts of SSS utterances is flawed (Crandall 1974, 1978; Baker 1978; Marmor and Petitto 1979; Kluwin 1981a, 1981b). The task for a hearing person attempting to speak and sign simultaneously appears to be psychologically and physically overwhelming. Under such difficult conditions, one or both parts of the signal will deteriorate. A hearing person will typically begin to audit the speech portion of the signal and will allow the sign signal to deteriorate either by omitting signs randomly or by deleting those signs that do not fit the rhythmic pattern of English speech. At the same time, the spoken signal is typically slowed down and altered phonologically and is often characterized by excessive halting, hesitation phenomena, repetition or other delaying tactics. In general, the less the speech signal is altered, the more the signed signal will be unintelligible. In our view, it is not an exaggeration to say that the signed portion of the SSS presented in virtually all of American deaf education is only partially comprehensible, even to skilled native signers. It is also not an exaggeration to say that often the signed portion of the SSS in American classrooms is largely unintelligible.

Johnson and Erting (in press) examined the sign supported speech productions of a hearing preschool teacher interacting with four-year-old deaf children. An excerpt from the transcript of her productions is presented below. In the transcript, the elipses (...) indicate intervening sentences by a child. Vocal English is in italics; sign glosses are in upper case. Signs in which the hand configuration corresponds to the first letter of a spelled English word (initialized signs) are underscored.

TELL SAY HORSE RABBIT NO
Tell ... tell the Easter Bunny ... He said, "No, he's

ALL OUTSIDE DIFFERENT COLOR Pro3
all out. You can take a different color.
FORGET TELL THANK-YOU
...You forgot to say you've ... say thank you ...

T YOU FORGET HER VOICE PLEASE
T says you forgot her. Use your voice please ...

ZERO ORANGE SORRY OUTSIDE ORANGE PICK OTHER COLOR
No orange. He's sorry but he's out of orange. Pick another color.

ZERO PURPLE WHAT WRONG TOGETHER-WITH EASTER DEVIL
No purple? What's wrong with this Easter Bunny? ...

Pro3 CAN'T HEAR YOU Pro3 CAN'T HEAR YOU
Well, tell him. He can hear you. He can hear you. ...

I THINK I FREEZE GREEN TOGETHER-WITH YELLOW FLOWER LOC-ON I-T
Ah, I think I want a green one with yellow flowers on it.

[-----unintelligible----------] YELLOW FLOWER [---] OTHER 1
Those are purple flowers. I said yellow flowers. Get another one.

EAT WAIT OTHER 1 CAN OTHER 1
Okay. Wait a minute. Can I have another one? Have another one?

I FREEZE OTHER 1 CAN I HAVE 2 PINK 1 GOOD
I want another one. Can I have two? Oh. A pink one.

I GET 2 MAYBE ASK GOOD
I got two. ... I don't know, maybe. Good. Okay, let's change.

GOOD EASTER DEVIL
You were a good Easter Bunny.

Johnson and Erting comment on this event as follows (in press: 63-4):

> **The teacher consistently misarticulates signs, a problem compounded by the fact that her misarticulations often result in signs that actually mean something else, for example, DEVIL and HORSE for RABBIT, CAN'T for CAN, and FREEZE for WANT. But more problematic is the incongruity of her signs with her spoken English. It is clear that her signing is not in any sense an exact representation of English speech. Many English words are not represented by signs, and there is no consistent pattern to what is eliminated. The end result is signed sentences that are mostly incomprehensible, often contradictory to the intended meaning, and largely incomplete. Even at best, the teacher's sentences are not accurate representations of English. To expect children with little or no hearing and with little previous contact with English to learn English from this kind of model is unrealistic.**

Productions of this quality are not unusual among hearing teachers using SSS. It is natural to wonder how such a state of affairs could possibly develop or be sustained. One explanation is that, because a hearing teacher is attending primarily to the spoken portion of the signal, the fact that the signed portion has broken down is seldom recognized. Under such conditions, teachers generally believe that, because they are signing, the children have access to the information being put out by their speech (Erting 1986). Thus, the focus on performance leads to an inability by the teacher to judge appropriately the needs and responses of the children. This is contradictory to our view that classroom education depends on teachers' ability to adjust their teaching strategies and what they say to the children's needs. It also results in providing an unintended advantage to those children in the class who have more residual hearing. These children, then, become the weathervane of the teacher's own judgments about the success of the lessons.

Even under the best of circumstances these observations remain true. Consider, for example, a situation in which a hearing teacher is actually able to produce signs clearly while speaking to a deaf child who has acquired a natural sign language from birth. When the teacher produces an utterance, the child will recognize many of the signs but will lack the competence in English grammar and the experience with the invented English signs necessary to decode the teacher's message. The child's competence in ASL grammar would not help because the teacher's utterances are not structured by ASL grammatical principles.

While it may seem to be too obvious to say, it remains true that, in order to understand signed utterances built on English syntactic and morphological principles, a child must first be competent in English. It also remains true that most deaf children arrive at school with little or no competence in English. These observations combine to suggest that English is not the most appropriate language to use for instruction in important and valued parts of the curriculum. This conclusion seems to have escaped the reasoning of those who have designed our current approaches to instruction for deaf children.

In opposition to this view, proponents of "signed English" assume that systems for representing English speech make English "visible" to deaf students. This assumption then becomes support for the expectation that deaf students will acquire signed English competence naturally through seeing English and that this signed English competence will lead to spoken English competence and written English competence. The following series of comments from the inventors of Signing Exact English make the assumptions of this approach clear (Gustason, Pfetzing and Zawolkow 1975):

> **The message is clear. Deaf children must be exposed as young as possible to English if we want them to learn it well, and since input must precede output we need to make sure that their perception of the language is as unclouded as possible. (p. iv)**

> Signs present larger, more discrete symbols in communication than either speech or fingerspelling and are thus easier for very young deaf children to pick up. (p. v)
>
> However, American Sign Language is a language in its own right, and this language is not a visual representation of English.... Its structure is different from that of English, and the symbols represent concepts rather than English words. A child learning American Sign Language at an early age has communication, but he must still learn English if he wishes to function well in our society, and he must learn it as a different form of communication. Moreover, the difference in structure and symbolism makes ASL a difficult language for many hearing people to master. Since most deaf children have hearing parents whose native language is English..., we suggest that these parents can most comfortably learn to sign English and so expose their child to their own native language, rather than learn ASL and have the child later learn English as a second language. (pp. v-vi)

From the time of its introduction to the field, the philosophy and methodology of Total Communication has depended on the assumption that SSS provides a visual representation of English. Denton was among the first proponents of Total Communication in the United States and oversaw its implementation at the Maryland School for the Deaf in 1968. The following passage summarizes his view on the developmental functions of SSS (Denton 1976:6):

> In regard to the day to day practical aspects of Total Communication, the concept simply means that, in so far as possible, those persons within the child's immediate environment should talk and sign simultaneously, and the child should be benefiting from appropriate amplification. This, of course, is based upon the belief that it is indeed possible to sign what one says with respect to English syntax, and that signs and speech can be compatible. The consistent use of simultaneous speech and signing and the consistent use of appropriate amplification provides [sic] the child with a syntactical model for imitation which is both visual and auditory. The highly visual and dramatic language of signs operate [sic] as the foundation of Total Communication reinforcing, undergirding and clarifying those minimal clues available through speechreading. Likewise, minimal auditory clues are enhanced and reinforced by signs and speechreading. For all of us then, communication is total or multi dimensional ... [sic] one dimension enhancing, reinforcing and enriching the other.

But the validity of the underlying assumption that any system of signs (either natural or invented) is capable of representing speech in a way which will allow it to serve as a model for the natural acquisition of a spoken language has never been demonstrated. From the time that SSS was first instituted as educational practice, linguists and some educators have argued that it is unable to serve the purposes claimed for it (Charrow 1975; Reich and Bick 1977; Stevens 1976; Quigley and Kretschmer 1982; Johnson and Erting, in press).

Evidence suggests that grammars of English developed by deaf children who see SSS as their model do not conform to the grammars of English developed by hearing children who learn English through listening and speaking. Charrow (1974) demonstrated that the broad variation in the written English of deaf children points to the existence of highly idiosyncratic grammars of English, which differ substantially from standard English, and result in the kind of productions typically labelled "deaf English."

S. Supalla (1986) provides evidence that the grammars of children's "English" signing are also characterized by significant idiosyncratic divergences from the grammars predicted by the educational model. He studied the signed output of deaf students who had been in an "ideal" signed English environment for several years. Although their teacher produced faithful signed renderings of English sentences while teaching, the signing of the students did not show evidence of genuine competence in English. He found that each child formed an idiosyncratic grammar,

containing innovations quite unlike English, but resembling in some ways the complex verb morphology of natural sign languages. This study clearly suggests that it is unrealistic to expect that exposure to signed English will lead naturally to the acquisition of competent English grammar, either spoken or signed.

Research on the acquisition of spoken languages by hearing children confirms that such results can be expected. McLaughlin (1984:188-9,194) summarizes work that demonstrates that when hearing children or adults attempt to learn a second language before adequately learning a first language, or when one or both linguistic environments are impoverished, the resulting grammars will be idiosyncratic with respect to the ordinary grammatical patterns of the target language. Moreover, he contends that such results are predictable if the two languages are not clearly differentiated (1984:213). From this perspective it appears that the mixture of English and ASL found in SSS and the generally impoverished quality of the signed portion of the signal may provide a model that is counter-productive to the goal of language acquisition.

Quigley and Paul (1984:19-23) conclude that there are no studies demonstrating that the SSS movement has been successful in promoting English achievement. In examining what they call the most favorable evidence in support of each approach to deaf education, they find that results favoring any one of the approaches can usually be explained by an intervening variable, such as socio-economic status, literacy and educational level of the parents, or personal involvement of the parents. They find no unequivocal evidence in support of the practices associated with Total Communication.

It is still widely believed, however, that ASL, while possibly a nice means of communicating socially, is unsuited for the educational process. In fact, both the official statements and the common practice in American deaf education suggest that those in charge of educational institutions still believe that early sign language exposure inhibits the learning of speech. In a recent debate in the magazine **Deaf Life**, the superintendent of a state residential school for deaf children, made the following comments (Bellefleur 1988:23):

> **ASL is a beautiful, conceptual language, and I truly believe that it has an important place in the proliferation of a deaf sub-culture, but it has no place in the education process, if deaf citizens ever wish to compete with their hearing counterparts, with any kind of efficiency.**
>
> **. . . When I ask myself why those individuals would use written English to support a language that dispossesses its users, I have to wonder if the subconscious motives of the advocates might actually be to keep their constituents in a state of impoverished language.**

Because of views such as this it is unusual to find deaf teachers in public school programs for deaf children. Most deaf teachers work in residential schools, but even here it is still common practice throughout the United States to put them in the upper grades or with developmentally retarded children where they will have less impact on the language use of the ordinary deaf children (Moores 1987:205). Thus, the deaf education system, in which over 42 percent of teachers were themselves deaf in the 1870's, was able to reduce that proportion to less than 12 percent by the 1960's (Lou 1988:76). This has been accomplished primarily through the argument that deaf teachers are poorly suited to speech-centered methodologies and by perpetuation of the misconception that sign language exposure and acquisition at an early age impedes the acquisition of spoken English and appropriate "hearing world" behavior. We suggest that this trend has been intimately linked to the difficulty deaf students encounter in attempting to acquire the contents of the curriculum.

On the other side of the issue is a fact that has been recognized by researchers for many years: deaf children of deaf parents on average achieve higher levels of proficiency in school-related skills than do children from all-hearing families (Stevenson 1964; Stuckless and Birch 1966; Meadow 1968; Vernon and Koh 1970; Corson 1973; Brasel and Quigley 1977; Moores 1987:198-205). In all of these studies, children from deaf families consistently outperform children from hearing families in most measures of academic achievement. Moreover, in most of these studies there were no significant differences between the two groups in speech or in lipreading. Although there are many factors to be considered, e.g., not all deaf parents sign, not all parents who sign use ASL, etc., (for a review of such considerations, see Quigley and Paul 1984:18), the overriding difference between these children and those born to hearing parents is early exposure to a natural language and lifelong communication with competent language users about topics of everyday life. In addition, these children are born to parents fundamentally like themselves, from whom they can acquire a social identity (Erting 1982; Johnson and Erting, in press). These facts combine to suggest that early acquisition of sign language from competent adults may provide an advantage in the acquisition of academic skills and that it does not hinder the acquisition of English speech or literacy skills.

A possible explanation for this pattern is that deaf children of deaf parents, like all hearing children of hearing parents, are not taught their native language; they acquire it naturally through exposure to it. Because it is a visual language, a natural sign language provides deaf children with access to ordinary processes of language acquisition. In addition, evidence from research on spoken language suggests that bilingualism may enhance certain cognitive characteristics. Hakuta, for example, in summarizing research on bilingualism, states (1986:35):

> Take any group of bilinguals who are approximately equivalent in their L1 [first language] and L2 [second language] and match them with a monolingual group for age, socioeconomic level, and whatever other variables you think might confound your results. Now, choose a measure of cognitive flexibility and administer it to both groups. The bilinguals will do better."

To the extent that cognitive flexibility is a desirable goal in the education of deaf children, it may be that the acquisition of both ASL and English may provide an advantage rather than a obstacle.

For the most part, children from families with deaf members present fewer problems for deaf education than do those born to all-hearing families. Although there have been only a few descriptive studies of deaf preschoolers (Erting 1982; Johnson and Erting, in press), it is evident that deaf children of deaf parents arrive at school better informed and with better linguistic skills in both English and ASL. But the general problem of low expectations in the system and lack of access to the curriculum remains even for these children. Thus, although they tend to perform at a level higher than their deaf age mates, as mentioned earlier, their level of performance is still not at a level equivalent to their hearing peers.

In those school programs where children are allowed to sign freely and where there are some children from families with deaf members, the language used by most of the children is American Sign Language. It is unlikely that they learn ASL from their teachers, who generally have only limited competence in the use of ASL or who probably do not use it in the classroom if they do know it. Woodward and Allen (1987) found that, of 1,888 teachers surveyed, only 140 reported using ASL in the classroom. Further queries determined that only six of these 140 teachers could unequivocally be said to use ASL. As a result, the language-competent children themselves and competent adult signers with whom the children come in contact are able to undertake a large part of the socializing process for the children of hearing parents. Thus, in such situations, children of

hearing parents usually learn American Sign Language from their peers. Johnson and Erting (in press) document the existence and some of the dynamics of peer socialization to norms of language use among four-year-old deaf children.

Because children in such settings develop competence in American Sign Language, their social environment is much superior to that found in oral schools, in mainstream classrooms, or in Total Communication schools where children have not had substantial contact with ASL. It stands to reason that situations which permit the development of natural language more adequately provide contexts for both linguistic socialization and socio-emotional development.

There is substantial evidence that the capacity to learn a first language is most readily available during the first few years of a child's life (Lenneberg 1967). That such an effect is also present in the acquisition of sign language has been demonstrated by Newport and T. Supalla (1987), who have identified markers of late sign language acquisition that remain even among signers who have been signing for several decades. Those who acquired ASL during early childhood showed much more consistent grammars and a richer command of the complex structures of the language than did those who acquired it later. Thus, the sooner that contact between deaf children and competent adult and child signers can begin, the more complete and competent those children's ultimate command of the language will be.

Early acquisition of ASL may also be important to our goal of teaching English to deaf children. Research on bilingualism suggests that children and second language learners need a foundation in one natural language before attempting to learn a second language (Cummins 1979). Paulston summarizes data on age of acquisition and concludes (1977:93):

> **The evidence is perfectly clear that mother tongue development facilitates the learning of the second language, and there are serious implications that without such development neither language may be learned well, resulting in semilingualism.**

These findings combine to provide an additional argument for establishing a natural sign language as a first language as early as possible.

However, as reported by the Commission on Education of the Deaf, there has been little recognition of the value of establishing school environments that purposely take advantage of this sort of natural language acquisition process.

> **Little weight [in education of deaf people] is given to the value of using the method of communication the child has been accustomed to as part of his or her total program. (In fact, almost unrecognized is the legitimate status of American Sign Language (ASL) as a full-fledged native minority language to which all of the provisions of the Bilingual Education Act should apply.) Also too seldom recognized is the need for a deaf child to have other deaf children as part of his or her peer group, and to be exposed to deaf adults.(Commission on Education of the Deaf 1988:9)**

English-speaking parents of hearing children in the United States can assume that their children will be instructed in a language to which they have access. Similarly, children who do not know English have a right to be instructed in their own language until they know English. Current approaches to deaf education continue to pursue English-only and speech-dominant approaches. Such approaches expect the children to learn curricular material through communication in a form which they can understand only imperfectly at best. This puts the form of instruction (how

something is said) in constant competition with the content (**what** is said). In American deaf education, form usually wins, a fact which maintains and intensifies the gap in performance between deaf children and their hearing peers.

It is now understood that the reliance on speech-dependent means of communicating in early childhood education programs and in parent training programs has failed to achieve the accelerated English language acquisition that was expected of it (Lucas 1989). Its most pronounced effect is to delay acquisition of a child's first language and intensify the effect of the lack of early and extensive social interaction. Thus, although early childhood education is continually pushed to younger ages, many children still enter school with little or no competence in a natural language and with serious inadequacies in the kinds of social skills and cultural knowledge expected of children their age.

The Cycle of Low Expectations

We have proposed that changing language policy and permitting the use of ASL in classrooms would be of benefit in attempting to bring deaf children closer to normative grade-level achievement. It is probably not the case, however, that such a change alone would be sufficient to bring them to parity with their hearing peers. This is because deaf education in the United States has come to expect that deaf children cannot perform as well as hearing children and has structured itself in ways that guarantee that result.

The report of the Commission on Education of the Deaf (1988) contains descriptions and several recommendations concerning the appalling lack of standards and accountability in the field. But the situation is not the result of widespread cynicism or malfeasance. In fact, the field is populated by dedicated, hard-working, and committed individuals, most of whom have made a principled choice to pursue a career of public service. The problem results more from training programs, which, through a belief in and a commitment to speech-centered educational methodology, fail to prepare aspiring teachers to meet the actual communication needs of deaf pupils.

The curriculum of typical training programs in deaf education, for example, includes a great deal of material on teaching speech, the psychology of deafness (usually concerning the adjustment or lack of adjustment by deaf people to the norms of the "hearing world"), audiology, and spoken English language development, as well as the ordinary curriculum of teacher education. On the other hand, in most such programs it is rare to have a course about deaf people interacting with each other, a course that teaches about the role of ASL in the ordinary development of deaf children, or even a course that teaches a future teacher to understand or produce ASL. In fact, virtually all such programs teach only some system for SSS, and usually require only two or three such classes. The result is that, although trainees meet the expectations of the program, they are nevertheless singularly unprepared to teach deaf children. Moreover, once in the classroom, there is no genuine assessment of communication skills. If a teacher's students fail to improve their writing and reading abilities, it is always assumed to be the result of inadequacies in the children or the general difficulty of teaching English to deaf students. It is seldom suggested that the failure may actually result from a failure to communicate between teacher and children.

This lack of standards grows indirectly from the need to explain and justify more than a hundred years of failed educational philosophy and practice. Although the United States delegation refused to endorse the 1880 Milan Conference proclamations calling for oral-only education for all deaf children, our educational system has embraced the principles and practices of oralism since

that time. The requirement that teachers must speak as they teach and the emphasis on speech training for deaf students is, in fact, the practice of oralism, no matter what name it is given. Thus, although Total Communication is typically viewed as "manualism", we refer to it as **crypto-oralism**, for the essence of Total Communication is to require students to comprehend and learn subject matter through spoken English, albeit supported by signs.

Broadly speaking, the system has been able to convince its own members and the general public that the failure of speech-centered deaf education has been the fault of the students rather than that of the system or the practices of the people in it. Thus, the public image of an educator of deaf children (although seldom stated so explicitly) is one of a highly skilled, almost mystically qualified, altruistic practitioner, who is "helping" deaf people to achieve something greater than they would otherwise have been able to. At the same time the educator is presented as one who is limited in what he or she can do by the inherent limitations of deaf people. As a result, the system itself is not subject to criticism and has been allowed to exist without expectations of success.

The conflict between the perceived competence of educators and the failure of their students never calls the system into question. The two facts exist together in apparent comfort, never challenging the practices of the system. But the situation also leads to an uncomfortable double bind for teachers of deaf children, who must manage the resultant conflict between their public image and the knowledge that much of their effort is unsuccessful.

It also results in contradictory claims in which deaf people are represented both as being deficient and as especially intelligent or clever to have achieved so dramatically against the odds. Such contradictory statements at once demonstrate and deny the reality of the failure. Thus, it is possible for a leading scholar in the field of deaf education to make the following claim (Moores 1987:1-2):

> In the United States, the results of decades of standardized achievement testing suggest a severe educational gap between deaf and hearing students, especially in areas related to English, such as reading. But despite apparent limitations, deaf people attend post-secondary training programs in approximately the same proportion as hearing people. The fact that approximately 65 percent of deaf graduates of Gallaudet University go on to graduate schools, where they compete on equal terms with hearing students, suggests that the deaf/hearing gap in achievement may be more apparent than real.

Such statements ignore the fact that attendance in these programs is in itself not sufficient evidence of success. Standardized tests exist for the purpose of assessing students' achievement within such programs. The low averages in achievement scores may not be dismissed just because the system chooses to allow students to progress in spite of low achievement. The fact that students with deficiencies in central academic areas are allowed to proceed to post-secondary and graduate-level education is additional evidence of the failure to maintain standards in the system, not evidence of its success. Moreover, Gallaudet University chooses its students from the top five percentiles of the population of deaf students in the United States. Even so, a large proportion of those who continue on to graduate school do so despite the presence of academic deficiencies, especially in English literacy, which often present them with substantial challenges in their "competition" with hearing students. To suggest that the success of these students invalidates the overall failure of the population is statistically unfounded rationalization.

In these ways, the speech-centered system of deaf education in the United States has not been held accountable for its failures. To the contrary, over the last 150 years the system of deaf education has been able to argue that its failures, rather than being reason for self-evaluation, are justification for its own growth. Since 1870, the number of teachers of deaf children in the United

States has increased from around 200 to more than 10,000 today (Lou 1988:76). The increase has been achieved primarily by arguing that failures can be reduced by intervening at earlier and earlier ages. Thus, a system that typically admitted children to school at about the age of ten or twelve until the 1890's, moved the age to about six years old during the early 1900's and then to about three years old in the 1940's. Currently, "early intervention" programs are being established widely in order to push back the first contacts to infancy.

Simultaneously, because none of these expansions has succeeded in solving the problem, expansion at the other end has been necessary, so that at Gallaudet University there now exist a post-high-school reading program, a preparatory program, and a pre-freshman status, which may all precede actual entry to the university as a freshman. In addition, there is now a massive system of deaf social services, all of which provide genuinely needed services, but which in another sense extend services to deaf people whom the system has failed to prepare to succeed in modern America. The result is that there is also now a large service industry that thrives on the failure of the system of deaf education.

Thus, the situation is perpetuated through a commitment to a set of beliefs that devalue sign language, restrict access to information, deny deaf students' capabilities, and diminish deaf independence, all by placing a higher educational value on speaking than on communicating or learning. In order for a new approach to deaf education to succeed, the participants in the program must subscribe to the belief that deaf people can be expected to learn as much as hearing children, that the pedagogical methodology and practice must be subject to evaluation and revision, and that not all failure can be blamed on the students.

A MODEL PROGRAM FOR EDUCATION OF DEAF CHILDREN

In the remainder of this essay we propose a model program for educating deaf children. We present, first, a set of principles that arise from the observations we have made above, and, second, outline a design for such a program as it might be instituted in a school district. We do not expect that such a program will quickly or easily alleviate the ills of deaf education, or that it will make the process simple or non-controversial. If there is one lesson that arises from the history of deaf education, it is that solutions to problems are quite complex. We do believe, however, that it will achieve much more acceptable results than any of the options currently being employed in the United States.

We are by no means the first to propose the use of ASL as a first language and as the language of instruction for deaf children. From its inception and continuing until the shift to oralism, deaf education in our country encouraged ASL as a first language, used competent deaf adults as models, and appears to have achieved satisfactory results in teaching English (Lane 1984, Lou 1988). More recently, numerous scholars, both deaf and hearing, have called for the institution of programs broadly labelled as bilingual education (Kannapell 1974, 1978; Woodward 1978; Erting 1978; Stevens 1980; Quigley and Paul 1984; Paul 1988; Strong 1988). Each of these proposals shares our view that ASL should be the first language of deaf children, that English should be taught according to the principles of teaching English as a second language (ESL) and that the ultimate goal of the system is well-educated, bilingual children.

Programs built on principles similar to those we are proposing have been established as national policy in Sweden, Uruguay, and Venezuela, and are being developed in schools in each country. We know of the following programs in which elements of a bilingual experience have been instituted as a part of the curriculum: Beirut, Lebanon (at the Institut de Reeducation Audio-Phonetique Ain-aar), Copenhagen, Denmark (School for the Deaf at Kastelsvej), Santa Monica, California (the Tripod Program at PS-1), Fremont, California (California School for the Deaf. (Cf. Strong 1988; Hanson and Padden 1988)), Framingham, Massachusetts (The Learning Center for Deaf Children), and Philadelphia (the Pennsylvania School for the Deaf). To our knowledge, however, no programs in the United States have adopted fully a set of principles and practices such as those we propose.

Guiding Principles

- **Deaf children will learn if given access to the things we want them to learn.** Children are born with the capability and desire to learn a language and a culture. Current practice denies access to such learning by denying genuine first language proficiency to most deaf children, and by demanding that children communicate in a language they do not know. All communication conducted between children and adults in educational contexts should be conducted in a language to which the children have access. In the beginning this will be the child's first language. If access to content is through the child's first language, it follows that all adult participants in the setting must be proficient in the child's first language.

- **The first language of deaf children should be a natural sign language (ASL).** When children are born, they are predisposed to learn a natural language. Natural sign languages are learned easily through normal language acquisition processes by deaf children who are exposed to them at an early age (Bellugi, et al., in press). For this reason, natural sign language is the best vehicle for providing access to socio-cultural information during early childhood and to the curricular content of education at all ages. We have found no evidence to support the notion that early sign language acquisition inhibits or otherwise

interferes with the acquisition of literacy or speech in English; to the contrary, there is evidence (cited above) that early language exposure enhances the later academic and linguistic achievement of deaf students.

- **The acquisition of a natural sign language should begin as early as possible in order to take advantage of critical period effects.** The earlier a child learns a first language, the more opportunity he or she will have to learn about the world and the more prepared he or she will be (both linguistically and culturally) for learning the curricular content of an educational program. Upon identification, a deaf child should immediately be given extensive contact with adult deaf signers in order to take advantage of the capacity to acquire a language naturally. In general, the greater the delay of acquisition of a first language, the greater the deficit in access to information and the later the acquisition of proficiency in any other language. In addition, the child's family should be provided with intensive sign language training and education about deafness in order to promote a home environment which promotes cognitive, linguistic, social, and emotional growth.

- **The best models for natural sign language acquisition, the development of a social identity, and the enhancement of self-esteem for deaf children are deaf signers who use the language proficiently.** The initial models for language acquisition for deaf children with hearing parents should be deaf adults. As the child grows, sources for sign language acquisition might also include older deaf children, peers from deaf families, and proficient hearing signers. There should be deaf adults present in all educational contexts. This is critical also because ASL, like all natural languages, exists within a cutural context. Without the presence of adults who have access to the understandings that arise in such contexts, the acquisition of the language is not truly complete (Epstein 1988).

- **The natural sign language acquired by a deaf child provides the best access to educational content.** We have discussed this issue at length earlier in this paper. Along with early acquisition, this is the central and critical concept of the proposal. Its practical application is that anyone attempting to teach curricular content to the children must be a fluent signer. There now exists a large pool of fluent signers, which consists of deaf people already trained to be teachers of the deaf, bright young deaf students who could be encouraged to undertake such training, and a smaller number of hearing teachers and students who are fluent in ASL. Mather (1987) compared the classroom interaction of a deaf teacher, fluent in ASL, with that of a hearing teacher who was less fluent. She found that the conduct of lessons, even about non-linguistic topics, proceeded most effectively in interaction with the deaf teacher. She argues that these results stem from fluent use of the language and knowledge about how to interact in ASL.

- **Sign language and spoken language are not the same and must be kept separate both in use and in the curriculum.** American Sign Language, as the first language of the children and as the primary language of instruction, should be employed both to impart information and to talk about English. While it may be useful to use special signs to talk about English structures and to represent those aspects of English in signing, such systematic English signing should not be used for the transmission of content or the conduct of interpersonal communication in the classroom. English will be taught as a second language and methods of English instruction will take advantage of the first language competence the children already have. As grade level increases, the acquisition of information through reading becomes more critical and English will become increasingly important as a vehicle of instruction. Classroom discourse, however, will continue to be in ASL.

Some readers might misinterpret our focus on ASL discourse as a neglect of English. It is not our intention to diminish the value of learning English for deaf people. It is an undeniable fact that proficient English is necessary to economic survival in the United States. Of more direct relevance to this paper, however, is the fact that in each successive year of school, a larger proportion of the curricular content is located in books and other reading material. Thus, if our goal of at-grade-level curriculum is to be met, children will need to have increasingly higher levels of proficiency in the reading and writing of English in order to succeed.

Our goal is children who are bilingual in ASL and English. Thus, proficiency in English is one of our primary objectives. We contend simply that both the learning of English and access to the curriculum may be speeded and enhanced by establishing ASL as the first language.

Both languages should be respected, valued, and used by all adults in the program and the specific utility of each should be a topic of open discussion. The importance of English literacy in the adult life of deaf people in the United States should be a topic included in both the language and the social studies curricula.

- **The learning of a spoken language (English) for a deaf person is a process of learning a second language through literacy (reading and writing).** Erting (1982) and Sacks (1988) both emphasize that the essential adaptations that deaf people must make to succeed in a world designed by and for hearing people are visual. The learning of English for a deaf child is no exception. It is primarily a visual (as opposed to auditory) experience. This is true whether the child learns English through the lipreading of English speech, through a signed code for English, or through literacy. De Bentancor (1986) has shown, for example, that for deaf children learning Spanish through oral methods, the coding of lipreading is visual, rather than auditory or phonological.

  Given that the learning of a spoken language is a visual experience, even by ostensibly auditory methods, and given the difficulties we have described for such speech-dependent methods, we propose to make the process overtly and purposely visual. Thus, the learning of English will be through written texts, not through speech. That this can be an appropriate and successful method for the introduction of a spoken language has been argued by Paul and Gramly (1986) and documented by Suzuki and Notoya (1984), who compared the acquisition of written and oral language in six deaf children from infancy to about the age of six. They report success at teaching reading before speaking and conclude that for deaf children (1984:10):

  > (1) Acquisition of written language is not dependent on oral language; (2) Written language teaching can be initiated at about one year of age; and (3) Written language is easier to learn than oral language .

- **Speech should not be employed as the primary vehicle for the learning of a spoken language for deaf children.** Understanding and producing speech are skills to be developed not as a means of acquisition, but as a result of acquisition, after competence in the language has been established through literacy.

  This does not preclude the use of early auditory stimulation and vocal practice. Both are important parts of our proposal for early childhood education. Nor does it suggest that children should not receive auditory amplification at an appropriate time. It claims only

that hearing should not be the primary channel through which a deaf child receives linguistic input and that a primary focus on hearing and speech should not be allowed to hinder normal age-level acquisition of language or knowledge.

- **The development of speech-related skills must be accomplished through a program that has available a variety of approaches, each designed for a specific combination of etiology and severity of hearing loss.** Children who are post-lingually deafened, those who have substantial residual hearing, and those who are severely and pre-lingually deaf will each require different approaches to the development of speaking, hearing, and lipreading skills. Each child, however, will have access to ASL as a primary language as well as access to the curriculum through ASL. No child will be asked to learn to understand speech and to acquire knowledge through speech at the same time.

- **Deaf children are not seen as "defective models" of normally hearing children.** The role of the model system proposed here is not to "fix" deaf children or to make them more closely resemble their hearing peers, either in language or behavior. The role of the system is to prepare them to participate fully and effectively in modern American life. This includes the development of English competence, particularly in reading and writing. But more centrally, it involves the provision of grade-equivalent access to all the curricular matter of American education. Because the central focus of the program is the development of English literacy and the provision of grade-level or above achievement in all areas of the curriculum, the role of developing speech, while not devalued, is not the central concern. For some deaf children, literacy will be the sole form of proficiency in English. Because such children will have full access to the content of the curriculum, they will be able to develop the competencies necessary to have equitable options as adults.

  A related issue is the customary use of the term "intervention" by contemporary professionals dealing with deaf children. It is our position that intervention is only necessary if some negative or pathological process is occurring that needs to be eliminated or terminated. If ordinary language acquisition is permitted to occur, there should be no need for "intervention." From this perspective, however, there may in fact be a need to intervene with respect to the emotional needs of the parents and family members in adapting to the deafness of their children.

- **We concur with one of the observations of the report of the Commission on Education of the Deaf, that "there is nothing wrong with being deaf" (1988:vi).** Moreover, there are many positive aspects to membership in a deaf community, to using an aesthetically pleasing language like ASL, and to adapting effectively and successfully to modern American life. Accordingly, a major part of all aspects of the proposed program will be to reinforce this view among parents, children, and service providers alike, both by making explicit the positive aspects of deaf life and by providing opportunities for interaction with the deaf community.

- **The "Least Restrictive Environment" for deaf children is one in which they may acquire a natural sign language and through that language achieve access to a spoken language and the content of the school curriculum.** Public Law 94-142 states that handicapped children must be given an educational placement that provides them the "least restrictive environment." In general, this has been interpreted as that environment most like an ordinary environment. Combined with economic considerations, this concept has created a situation in which an increasing percentage of deaf children are placed in "mainstream" classrooms, sometimes with an interpreter, but often with no special services. In most

cases this is done without regard for the child's linguistic background, so that most such children are poorly prepared to deal with sign language or any other language when they enter school. They are expected to acquire English through a one-way communication process. Specifically, they are expected to get English, either through the speech of the teacher or through the signing (usually actually a code for English) of an interpreter as he or she attempts to encode what the teacher is saying. In such circumstances, an interpreter's signing stands little chance of providing an adequate model of either sign language or English, and without one-to-one communication the child stands little chance of learning a language. It is our view that the mainstreaming of deaf children from hearing families is entirely inappropriate, and that the appropriate placement for them is in environments where they will be allowed to come in contact with other deaf people and to acquire a natural language through interaction.

For deaf children of deaf parents who have already acquired age-level proficiency in a natural sign language, mainstream placements may be less inappropriate when there is a highly skilled ASL interpreter present. However, aside from the widespread problem of unavailability of qualified interpreters, even these children are likely to encounter both social and academic difficulties stemming from such factors as stigmatization, social isolation, inability of even the best interpreters to convey everything that is occurring in a classroom, a general restriction on the child's ability to independently receive information from peers, and such practical considerations as having to watch the interpreter while the hearing students may listen and simultaneously perform important visual tasks, such as reading, looking at diagrams on the board, and so on (Winston 1988). In addition, it stands to reason that if interpreters are using ASL, children are again not receiving a model of English.

Stone-Harris (1988) has observed that, in spite of these difficulties, the current situation within deaf education programs has caused many deaf parents to seek mainstream placements for their deaf children in order to provide access to at-grade-level curricular content. If our proposals were successful in providing at-grade-level content in special programs, such adaptations would be unnecessary for deaf children of deaf parents.

Description of Major Components

In this section of the paper we describe the components of a model program for the education of deaf children. A Family Support Program assists in the adaptation and language learning of deaf children and their families from the time of their identification. A Family-Infant-Toddler Program provides organized activities and training with the goal of providing a rich environment for the acquisition of ASL and socio-emotional development. The goal of the Preschool-Kindergarten Program is to prepare children linguistically, socially, and academically for entry to a regular primary school curriculum. A cooperative Child Development Center will provide day-care and linguistic and developmental experiences for children from early childhood through the third grade. In grades 1 through 12 the aim is to achieve on-grade-level performance in academic achievement.

Family Support Program

The goal of this component is to provide educational and emotional support for the families of deaf children. It is critical that parents understand the differences between our model of education and the interventionist models that are more typically available. We are asking them to

come to grips with the deafness of their child in a new and different way. We are presenting their child, not as a defective human whose natural tendencies to learn and interact visually must be inhibited, but as a capable person whose first linguistic task must be to learn a language other than that of the parents in order to succeed. This will entail an understanding of the challenge a deaf child presents to a family, in which he or she will not be able to participate normally or fully without substantial adjustments by siblings and parents. The focus of family activities will be around the acceptance of this view and to the resulting family adaptation to and participation in the child's development it requires.

The program will be accessible to parents and family members throughout the time that their child is in school. Over time, a significant role will be played by the experienced parents in assisting in the adaptation of new parents and family members to the program.

The program includes the following parts:

1. Parent Support Groups
2. Weekly deaf community contact (foster grandparents)
3. Family education and counseling by professionals
4. Weekend camp programs to provide occasional intensive contact with the deaf community
5. Summer camp programs to provide yearly, long-term contact with the deaf community

Family-Infant-Toddler Program

This component aims toward the development of American Sign Language skills for deaf infants and toddlers and the development of sign language and interactional skills for their parents and siblings.

1. Family:
   a. ASL teaching
   b. family counseling
   c. deafness education

2. Infants-Toddlers:
   a. ASL acquisition
   b. play groups with focus on language and psycho-social development
   c. reading readiness
   d. speech readiness
   e. auditory stimulation
   f. cognitive development
   g. socio-emotional development
   h. motor skills development

Preschool-Kindergarten

The aim of this curriculum is to provide preschool and kindergarten environments which are geared to the continued development of the child and provide exposure and training equivalent to that found for their hearing peers. The content is designed to ready the children to enter primary school.

Beginning in the Preschool and continuing throughout the grades, every classroom will be staffed by both a deaf teacher and a hearing teacher who signs fluently. Both will be equally responsible for the conduct of the classroom and for teaching the non-linguistic aspects of the curriculum. In addition, the deaf teacher will be the native model for the acquisition and development of ASL proficiency and the hearing teacher will be the native model for the acquisition and development of English proficiency. Each will be a model of the sort of bilingual person the program is designed to produce. The apparent additional cost of two teachers in the classroom will be offset by doubling the number of students in classes (to an average class size of 16).

1. Program Content:
   a. ASL acquisition
   b. play groups with focus on language development
   c. reading skills
   d. speech skills
   e. auditory stimulation
   f. cognitive development
   g. socio-emotional development
   h. motor skills development

Grades 1 - 12

The goal in this component is to have deaf students (on-average) acquire exactly the same curricular content as their hearing peers. In order to achieve this goal, American Sign Language will be the primary language of instruction throughout the program. English will be introduced and taught as a second language, beginning in the first grade. The section of the program devoted to the acquisition of English language reading and writing skills will require special classroom materials, the development of which will be overseen by the curriculum developer. Speech and auditory training will continue on an individualized basis.

Through the grades, there will be an increasing role of English as a vehicle of instruction, primarily through the reading of textual material. Written English combined with explanation and translation in ASL will be used to achieve competence in English as a second language. Primary emphasis will be on the achievement of literacy in English with the teaching of speaking and lipreading skills dependent on prior acquisition of literacy. In general, at-grade-level reading proficiency will be necessary for students to maintain at-grade-level performance in content areas. Should this goal prove to be unfeasible, it will be necessary to identify and adapt reading materials that present content at grade level but at below-grade English levels. Such materials exist for bilingual education programs elsewhere in the United States. If it is necessary to use such materials, the goal of at-grade-level reading and writing will persist until it is met.

Child Development Center

The Child Development Center is an absolutely necessary component of the program. It is set up to provide day-care and developmental experiences for children from the time they are identified as deaf until the end of the third grade. For the youngest children it will present a stimulating language environment and a stimulating learning environment. The children will acquire ASL competence through extensive daily contact with native users of the language. The CDC staff

will consist of deaf adults fluent in ASL and trained as day care providers. We propose that the presence of these adults and the interaction of children with one another should engender ordinary acquisition of ASL.

We also propose that the day-care program of the Child Development Center have a required cooperative component for parents. Each family (and ideally each parent) would be asked to work a certain number of hours per month as an assistant to the regular staff. Such a requirement could have numerous benefits for the parents. They would have the opportunity to observe their child interacting with other children and with deaf adults and to interact themselves with deaf people. They would observe and have the opportunity to learn specific techniques of reasonable and effective interaction with deaf children. They would see ASL in use and have the opportunity to develop their own signing skills in practical contexts.

While day-care is not typically seen as a responsibility of the educational system in the United States, in the case of deaf children it is necessary in order for language acquisition to proceed on schedule and at a normal pace. In school systems unable to justify the provision of day-care services, it is likely that private, non-profit day-care facilities could be established with the help of outside funding. Once established, such businesses should be able to become self-supporting.

Administration, Research, and Development

This component focuses on the overall conceptualization and design of the project, and oversees implementation within programs. The research and development aspect monitors progress and develops new approaches to implementing the conceptual design. A unique aspect of this design is that it will include research on language acquisition and evaluation of the progress of the children and the effectiveness of the program on an ongoing basis.

This will require a full-time administrator and a full-time research and development specialist, who will produce the curriculum, beginning with family-infant training and continuing through the twelfth grade.

Materials and Resources Development

The primary focus of this component will be to select existing print or other visual materials, revise and adapt them as necessary, and to identify technological means to enhance the provision of the curricular content. A major component will be the development of several types of written and videotaped materials:

1. Videotapes for sign language training directed toward both parents and children.
2. Print materials for reading readiness, reading, and writing.
3. Companion print and captioned video materials to accompany standard grade level content sources.
4. Video materials on deaf people and their way of life.
5. Print and non-print materials for teaching English as a second language.
6. Print and non-print materials for teaching ASL arts.
7. Exploration of interactive videodisc-computer technology for the provision of comparative ASL and English passages, as described by Hanson and Padden (1988).

This will continue throughout the life of the project, with new materials being developed for each succeeding level.

The implementation of the proposals we are making will not be easy. It will require a long-term commitment of the educational resources of a large public school district or deaf school. In addition it will require, among other things: the recruitment of deaf teachers at the lower grades and preschool levels; retraining hearing teachers who do not sign well; community development work to establish the various aspects of the parent family program and the CDC; a great deal of curriculum development; a great deal of materials development; and a program that teaches all participants in the program that the education of deaf children can be successful.

REFERENCES CITED

Allen, Thomas E. 1986. Patterns of Academic Achievement Among Hearing Impaired Students: 1974-1983. In: Arthur N. Shildroth and Michael A. Karchmer (eds). Deaf Children in America. San Diego: College-Hill Press, 161-206.

Baker, Charlotte. 1978. How does "Sim-Com" Fit into a Bilingual Approach to Education? In: Frank Caccamise and Doin Hicks (eds.). American Sign Language in a Bilingual, Bicultural Context. The proceedings of the Second National Symposium on Sign Language Research and Teaching. Silver Spring, MD: National Association of the Deaf, 13-26.

Bellefleur, Philip A. 1988. Letter to the Editor. Deaf Life 2, 23.

Bellugi, Ursula, and Lucinda O'Grady, Diane Lilo-Martin, Maureen O'Grady Hynes, Karen van Hock, and David Corina. (In Press). Establishment of Spatial Cognition in Deaf Children. In: Virginia Volterra and Carol J. Erting (eds.). The Transition from Gesture to Language in Hearing and Deaf Children. New York: Springer-Verlag.

Brasel, K., and Stephen P. Quigley. 1977. The Influence of Certain Language and Communication Environments in Early Childhood on the Development of Language in Deaf Individuals. Journal of Speech and Hearing Research 20, 95-107.

Charrow, Veda R. 1974. Deaf English: An Investigation of the Written English Competence of Deaf Adolescents. Technical Report No. 236, Institute for Mathematical Studies in the Social Sciences, Stanford University.

Charrow, Veda R. 1975. Manual English: A Linguist's Viewpoint. Proceedings of the Congress of the World Federation of the Deaf. Washington, D.C.: Gallaudet University.

Commission on Education of the Deaf. 1988. Toward Equality. A Report to the President and the Congress of the United States. Washington, D.C.: U.S. Government Printing Office.

Corson, Harvey. 1973. Comparing Deaf Children of Oral Deaf Parents and Deaf Children Using Manual Communication with Deaf Children of Hearing Parents on Academic, Social, and Communicative Functioning. Unpublished Ph.D. Dissertation, University of Cincinnati.

Crandall, Kathleen. 1974. A Study of the Production of Chers and Related Sign Language Aspects by Deaf Children between the Ages of Three and Seven Years. Unpublished Ph.D. Dissertation, Northwestern University.

Crandall, Kathleen. 1978. Inflectional Morphemes in the Manual English of Young Hearing Impaired Children and their Mothers. Journal of Speech and Hearing Research 21, 372-386.

Cummins, Jim. 1979. Linguistic Interdependence and the Educational Development of Bilingual Children. Review of Educational Research 49, 222-251.

de Bentancor, Raquel Erramouspe. 1986. Observaciones Metodológicas para el Estudio de las Estrategias Lectoescriturales en el Niño Sordo. Paper presented to the Primer Encuentro Latinoamericano de Investigadores de los Lenguajes de Señas de los Sordos. Montevideo, Uruguay.

Denton, David M. 1976. The Philosophy of Total Communication. Supplement to the British Deaf News. Carlisle, Britain: The British Deaf Association.

Epstein, Paul. 1988. Deafness as an Occasion of Culture. In: Commission on Education of the Deaf. Toward Equality. A Report to the President and the Congress of the United States, Appendix T. Washington, D.C.: U.S. Government Printing Office, pp. 1-8.

Erting, Carol. 1978. Language Policy and Deaf Ethnicity. Sign Language Studies 19, 139-152.

Erting, Carol. 1982. Deafness, Communication, and Social Identity: An Anthropological Analysis of Interaction Among Parents, Teachers, and Deaf Children in a Preschool. Unpublished Doctoral Dissertation. Washington, D.C.: The American University.

Erting, Carol. 1986. Sociocultural Dimensions of Deaf Education: Belief Systems and Communicative Interaction. Sign Language Studies 47, 111-126.

Gentile, A. 1972. Academic Achievement Test Results of a National Testing Program for Hearing Impaired Students: 1971. Washington, D.C.: Gallaudet College Office of Demographic Studies, Series D, No 9.

Goodstein, Astrid. 1988. Fall, 1988 Admissions/Enrollment Summary. Unpublished Memorandum. Washington, D.C.: Gallaudet University.

Gustason, Gerilee, Donna Pfetzing, and Esther Zawolkow. 1975. Signing Exact English (Revised Edition). Modern Signs Press.

Hakuta, Kenji. 1986. Mirror of Language: The Debate on Bilingualism. New York: Basic Books.

Hanson, Vicki L., and Carol A. Padden. 1988. The Use of Videodisc Interactive Technology for Bilingual Instruction in American Sign Language and English. The Quarterly Newsletter of the Laboratory of Comparative Human Cognition 10, 92-95.

Johnson, Robert E. and Carol Erting. (In press). Ethnicity and Socialization in a Classroom for Deaf Children. In: Ceil Lucas (ed.). The Sociolinguistics of the Deaf Community. New York: Academic Press.

Kannapell, Barbara. 1974. Bilingual Education: A New direction in the Education of the Deaf. The Deaf American 26(10), 9-15.

Kannapell, Barbara. 1978. Linguistic and Sociolinguistic Perspectives on Sign Systems for Educating Deaf Children: Toward a True Bilingual Approach. In: Frank Caccamise and Doin Hicks (eds.). American Sign Language in a Bilingual, Bicultural Context. The proceedings of the Second National Symposium on Sign Language Research and Teaching. Silver Spring, MD: National Association of the Deaf, 219-232.

Karchmer, Michael, Raymond Trybus and M. Paquin. 1978. Early Manual Communication, Parental Hearing Status, and the Academic Achievement of Deaf Students. Unpublished Ms.

Kluwin, Thomas. 1981a. A Preliminary Description of the Control of Interaction in Classrooms Using Manual Communication. American Annals of the Deaf 126:510-514.

Kluwin, Thomas. 1981b. A rationale for Modifying Classroom Signing Systems. Sign Language Studies 31:179-187.

Lane, Harlan. 1984. When the Mind Hears. New York: Random House.

Lenneberg, Eric. 1967. Biological Foundations of Language. New York: Wiley.

Lou, Mimi WheiPing. 1988. The History of the Education of the Deaf in the United States. In: Michael Strong (ed.). Language Learning and Deafness. New York: Cambridge University Press, 75-112.

Lucas, Ceil. 1989. English Only: Bad News for the Deaf Community. EPIC Events: Newsletter of the English Plus Information Clearinghouse 1.6: 3.

McLaughlin, Barry. 1984. The Effects of Early Bilingualism. In: Barry McLaughlin. Second Language Acquisition in Childhood, Vol 1 (2nd Ed.). Hillsdale, NJ: Erlbaum Associates, pp. 177-213.

MacNeil-Lehrer News Hour. 1988. FOCUS: School of Silence, Deaf Education in America. Public Broadcasting System, August 28, 1988.

Marmor, Gloria, and Laura Petitto. 1979. Simultaneous Communication in the Classroom: How Well is English Grammar Represented? Sign Language Studies 23:99-136.

Mather, Susan A. 1987. Eye Gaze and Communication in a Deaf Classroom. Sign Language Studies 54:11-30.

Meadow, Kathryn. 1968. Early Manual Communication in Relation to the Deaf Child's Intellectual, Social, and Communicative Functioning. American Annals of the Deaf 113, 29-41.

Meadow, Kathryn P. 1972. Sociolinguistics, Sign Language and the Deaf Sub-Culture. In: T.J. O'Rourke (ed.). Psycholinguistics and Total Communication: The State of the Art. Washington, D.C.: American Annals of the Deaf, pp. 19-33.

Miller, June. 1970. Oralism. Volta Review 27:211-217.

Moores, Donald F. 1987. Educating the Deaf: Psychology, Principles, and Practices (3rd Edition). Boston: Houghton Mifflin.

Newport, Elissa L., and Supalla, Ted. 1987. A Critical Period Effect in the Acquisition of a Primary Language. Unpublished Ms.

Northcott, Winifred. 1981. Freedom through Speech: Every Child's Right. Volta Review 83:162-181.

Paul, Peter V. 1988. American Sign Language and English: A Bilingual Minority-Language Immersion Program. CAID-News'N'Notes. Washington, D.C.: Conference of American Instructors of the Deaf.

Paul, Peter V. and C. Gramly. 1986. Is Reading in L1 Really Necessary for Reading in L2, Especially when L1 has no Written Form? A Perspective on ASL and English. Paper

presented to the Eighth Delaware Symposium on Language Studies, University of Delaware, Newark.

Paulston, Christina Bratt. 1977. Research. In: Bilingual Education: Current Perspectives, Vol. 2: Linguistics. Washington, D.C.: Center for Applied Linguistics, pp. 87-151.

Quigley, Stephen P., and Peter V. Paul. 1984. ASL and ESL? Topics in Early Childhood Special Education 3, 17-26.

Quigley, Stephen P., and R. Kretschmer. 1982. The Education of Deaf Children. Baltimore: University Park Press.

Rawlings, Brenda. 1973. Characteristics of Hearing Impaired Students by Hearing Status: US 1970-71. Series D., No. 10, Office of Demographic Studies. Washington, D.C.: Gallaudet College.

Reich, Peter A., and Margaret Bick. 1977. How Visible is Visible English? Sign Language Studies 14, 59-72.

Sacks, Oliver. 1988. The Revolution of the Deaf. New York Review of Books 35(9), 23-28.

Stevens, Raymond P. 1976. Children's Language Should be Learned and not Taught. Sign Language Studies 11, 97-108.

Stevens, Raymond P. 1980. Education in Schools for Deaf Children. In: Charlotte Baker and Robbin Battison (eds.). Sign Language and the Deaf Community. Silver Spring, MD: National Association of the Deaf, 177-191.

Stevenson, E. 1964. A Study of the Educational Achievement of Deaf Children of Deaf Parents. California News 80, 143.

Stokoe, William C., Jr. 1960. Sign Language Structure: An Outline of the Visual Communication Systems of the American Deaf. (Studies in Linguistics: Occasional Papers 8) Buffalo, NY: University of Buffalo. [Rev. ed., Silver Spring, MD: Linstok Press, 1978].

Stone-Harris, Rachel. 1988. El Lenguaje de Señas de la Educación del Niño Sordo. Paper presented to the Centro Nacional de Recurso para la Educación Especial, Madrid, Spain.

Strong, Michael. 1988. A Bilingual Approach to the Education of Young Deaf Children: ASL and English. In: Michael Strong (ed.). Language Learning and Deafness. New York: Cambridge University Press, 113-129.

Stuckless, E., and J. Birch. 1966. The Influence of Early Manual Communication on the Linguistic Development of Deaf Children. American Annals of the Deaf 111, 425-460, 499-504.

Supalla, Sam. 1986. Manually Coded English: The Modality Question in Signed Language Development. Unpublished Masters Thesis. University of Illinois, Urbana-Champaign.

Suzuki, Shigetada, and Masako Notoya. 1984. Teaching Written Language to Deaf Infants and Preschoolers. Topics in Early Childhood Special Education 3, 10-16.

Trybus, Raymond, and Carl Jensema. 1978. Communication Patterns and Education Achievement of Hearing Impaired Students. Office of Demographic Studies, Series T, No. 2. Washington, D.C.: Gallaudet College.

Van Uden, A. 1968. A World of Language for Deaf Children (Part 1: Basic Principles). St. Michielsgestel, The Netherlands: The Institute for the Deaf.

Vernon, MacKay, and S. Koh. 1970. Effects of Manual Communication on Deaf Children's Educational Achievement, Linguistic Competence, Oral Skills, and Psychological Development. American Annals of the Deaf 115, 527-536.

Winston, Elizabeth A. 1988. Mainstream Interpreting: An Analysis of the Task. Unpublished MS. Washington, D.C.: Gallaudet University.

Woodward, James, and Thomas Allen. 1987. Classroom Use of ASL by Teachers. Sign Language Studies 54, 1-10.

Woodward, James. 1978. Some Sociolinguistic Problems in the Implementation of Bilingual Education for Deaf Students. In: Frank Caccamise and Doin Hicks (eds.). American Sign Language in a Bilingual, Bicultural Context. The proceedings of the Second National Symposium on Sign Language Research and Teaching. Silver Spring, MD: National Association of the Deaf, 183-203.

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Gallaudet University, in Washington, DC, is the world's only liberal arts university for deaf students. In addition to offering on-campus educational programs from the preschool to doctoral levels, Gallaudet is an internationally recognized center for research, program development, and consultation related to deafness and hearing loss. Gallaudet University is an equal opportunity employer/educational institution. Programs and services offered by Gallaudet receive substantial financial support from the U.S. Department of Education.